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| 10/796,424 | 03/08/2004 | Eric A. Nyberg | 14185-B | 1883 |
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| ATTN: IP SERVICES, K1-53 | | | MAI, NGOCLAN THI | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|--------------------------------------|
| Office Action Summary | Application No. 10/796,424 | Applicant(s) NYBERG ET AL. |
| | Examiner NGOCLAN T. MAI | Art Unit 1793 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 September 2007.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,2,4-6,24,26,27,29-35,37-39,41-53 and 152-156 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-2, 4-6, 24, 26-27, 29-35, 37-39, 41-53, 152-156 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No./Mail Date _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-548) | |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No./Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendment filed 9/10/07 has been entered. Currently claims 1-2, 4-6, 24, 26-27, 29-35, 37-39, 41-53, 152-156 are under examination, wherein claims 1, 6, 27, 38, 43, and 50 have been amended and claims 152-156 are newly added.

Status of rejected claims

Claims 6, 27, 29-35, 37-39, 41-53, 152-156 were indicated as allowable in light of applicant's amendment filed 9/10/07. However, upon further consideration, the indication of allowable subject matter of claim 8 is withdrawn the **finality** of that action is withdrawn. The claims are rejected as follows.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-6, 24, 26-27, 29, 50-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (EP 456441 A1, hereinafter referred to as "Chung") in view of Wainer (U.S. Patent No. 2,593,943) or U.S. Patent No. 6,555,051 to Sakata et al.

Concerning claims 1, 2, 4, 5, 24, 26, 27, and 29 Chung discloses a method for processing metal powder such as iron and stainless steel into solid part by sintering an injection molding a mixture of metallic powder and a binder system comprising a solid solution of a minor fraction

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of at least one high molecular weight polymer as solute in a major fraction of a low molecular weight solid chemical as solvent. See column 3, lines 11-25 and column 6, line 30 to column 7, line 18. The polymer disclosed can be polystyrene, polyethylene vinyl acetate, polyvinyl alcohol and block copolymers containing substantial blocks of polystyrene. See column 5, lines 6-16. Chung discloses the essential criterion for the chemical solvent is mutual solubility with the polymer when in the fused state which is more likely to occur when the chemical structure of the solid solvent and polymer solute are somewhat generally related and that a chemical solvent of aromatic structure is best in terms of mutual solubility. See column 4, lines 34-41. Chung also teaches (column 5, lines 24-29) the amount of minor fraction is never exceed about 40 % by weight, and generally about 5 to 30% by weight of the binder system. Chung continues to disclose (column 5, lines 33-45) the amount of binder by volume is typically about 30-40% maximum with about 20-25% minimum. Chung discloses (column 6, lines 30-34 and column 7, lines 20-26) solid solvent is acetanilide (AC) but it can be replaced with other solvent such as naphthalene (NAP). Since Chung teaches the binder system by volume is in an amount of 30-40% maximum, the volume percentage of the aromatic binder being part of the binder system therefore must be less than 40% by volume. And since the polymer has high molecular weight than the aromatic binder and the amount used is between 5-30% by weight of the binder system, the amount of polymer when converted from weight to volume would expected to be less than 10 vol%. Chung differs from the claims in that Chung does not teach the metal powder comprising an element metal that is a getter material.

However it is known in the art that binder used in iron based metal powder can also be used to bind getter metal powder such as Ti or Al. See Wainer column 2, lines 38-47 and

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column 4, lines 11-37 or Sakata et al, column 2, lines 25-30. Therefore to employ the binder system taught by Chung for making powder composition that contains getter material would have been obvious to one skill in the art.

Concerning claims 50-53, Sakata discloses (column 2, lines 31-37) other metal can be in include

Claim 1, 2, 4, 5, 6, 24, 26, 27 are rejected under U.S.C. 103(a) as being unpatentable over Broodo.

Broodo discloses composition for making anode by compacting, wherein the composition comprises getter material such Ta, Zr, Nb, Ti and Al and up to 15% by weight chlorinated naphthalene as an aromatic binder. See col. 3, lines 30-54. Although the reference implies the amount of the binder phrase in wt. percent, it is expected that, when converted to volume percent, this amount would overlap the claimed amount absent evidence to the contrary. As for the language "no additional binders in ... 10 vol%" recited in claim 1 and 6 or "no greater than 10 vol% of polymer as an additional binder" recited in claim 27, they are interpreted as optional and thus no other binder is required.

Broodo and the claims differ in that Broodo does not teach the exact same volume percentage of aromatic binder as recited in the instant claims. However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the binder proportions taught by Broodo overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Claims 1-2, 4-6 24, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable by JP06-002011 (see English translation, hereinafter referred as JP '011).

Concerning claims 1 and 6 and JP '011 discloses (0002) and (0003) a powder mixture composition comprising one or more than 2 kinds of powders which can be metal alloy and intermetallic and one or more than 2 kinds of powders of sublimable materials. JP '011 discloses (0009) sublimable materials are naphthalene, paradichlorobenzene, dichlorobenzene, dichlorobenzoic acid and dioxynaphthalene, diethoxalic acid and xyloquinone. JP '011 teaches (0010) the sublimation materials are generally used in the proportion of 10-50 wt%. As for the language "no additional binders in ... 10 vol%" recited in claims 1 and 6 and "no greater than 10 vol% of polymer as an additional binder" recited in claim 27, they are interpreted as optional and thus no other binder is required.

JP '011 does not use the term "aromatic binder" as recited in claim 1 and does not specify some of the numerical limitation as claimed (claim 1, 6, 24, 26, and 27).

However naphthalene or benzene are of the same materials employed as the aromatic binder of the present invention, it is a reasonable assumption that the sublimable material functions as a binder to the same degree in either the prior art or the claimed invention.

As for the numerical limitation, although the amounts of the aromatic species taught by JP '011 is in weight percent, it is the examiners position that, when converted to volume percent, these amounts would overlap the claimed amounts absent evidence to the contrary. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that; "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003). Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Concerning claim 2, the powder composition is formed into a compact by isostatic pressing. See (0001) and (007).

Concerning claim 4-5, naphthalene is a polycyclic aromatic.

Claims 1, 2, 4-6, 24, 26-27, 29, 33-35, 37-39, 41-49 and 153-156 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herrmann (U.S. Patent No. 3,330,892) in view of Wainer (U.S. Patent No. 2,593,943).

Concerning claims, 1, 6, 27, and 38 Herrmann discloses (column 1, lines 22-27) a moldable batch mixture for forming article by powder metallurgy forming techniques as recited in claim 2, wherein the mixture comprises inorganic material such as metal powder mixed with and dispersed in a fluid organic vehicle together with an organic deflocculant and binder. The binder is present in an amount of from 2-3% by weight. See column 2, lines 6-19. Hermann

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discloses organic vehicle can be any organic material that is solid at normal room temperature and pressure such as paradichlorobenzene, benzoic acid and naphthalene, column 3, Table I. The binder can be any one of carnauba wax, polymethyl methacrylate resin, polyethylene glycols with average molecular weight ranging from 3000 to 20000, polyvinyl acetate resin, unoxidized and oxidized microcrystalline waxes, styrene resins with average molecular weights of 1500 or more, chlorinated naphthalene and polyvinyl alcohol resin (column 7, lines 3-10). In example 12, Hermann discloses employing nickel and copper as metal powder for the moldable batch mixture where approximately 80% by weight of the metal powder and 17% by weight of aromatic species are used. As argued in the response filed 1/13/06 the applicant found that 40 vol% of the aromatic species is equal to approximately 14 wt%.

Herrmann differs from the claim in that Herrmann does not specifically getter material does not specifically teach aromatic amount as recited in claims 1, 6, 27 and 38 and does not specify some the numerical limitations as recited in claims 24, 26, and 153-156.

However it is known in the art that binder used with Ni-base or copper- based powder can also be used to bind getter metal powder such as Ti or Al. See Wainer column 2, lines 38-47 and column 4, lines 11-37 or Sakata et al, column 2, lines 25-30. Therefore to employ the binder system taught by Herrmann for making powder composition that contains getter material would have been obvious to one skill in the art.

As for the amounts of aromatic binder and metal powder, the differences will not support the patentability of the subject matter encompassed by the prior art unless there is evidence indicating such volume amounts are critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by

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routine experimentation." See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997). Furthermore, the specification contains no disclosure of either the critical nature of the claimed concentration range or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d, 1575, 16 USPQ2d, 1934 (Fed. Cir. 1990).

Regarding claims 29, 31, 32, 34 and 37, Herrmann teaches that the organic binder can be present in the amount of 2-3 percent by weight (column 2, lines 16-18) and the organic binder taught includes polymethyl methacrylate (a thermoset polymer) and polyvinyl acetate resin (thermoplastic polymer). Hermann does not teach using mixture of polymer as recited in claims 33 and 35. However, it is well settled that it is a matter of obviousness for one skilled in the art to combine two or more materials when each is taught by the prior art to be useful for the same purpose. *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). Hence it would have been obvious to one of ordinary skill in the art to replace part of the thermoplastic polymer of the reference with a thermoset polymer taught as equivalents of thermoplastic polymer by the reference.

Regarding claim 38-39, Herrmann discloses the deflocculant can be surfactants (column 4, lines 18+).

Concerning claims 41-42, Herrmann does not teach the amount of the surfactant.

However difference in the amounts of surfactant will not support the patentability of the subject matter encompassed by the prior art unless there is evidence indicating such volume amounts are critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation." See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

Herrmann discloses the deflocculant can be fatty acid (column 4, lines 27-33 and Table III), metal salt of fatty acid (column 4, lines 53-61 and Table V) and wax (column 6, line 55 to column 7, line 2). Herrmann does not use the term "lubricant" as recited in claims 43-47. However many of the deflocculant taught by Herrmann are the same as the compounds employed as the "lubricant" of the present invention. Because the actual material employed may be the same in the prior art or the invention product, it is a reasonable assumption that these compounds function as a lubricant to the same degree in either the prior art or the claimed invention.

Herrmann does not specifically teach the amount of lubricant as recited in claims 48-49. However the difference in the amount lubricant will not support the patentability of the subject matter encompassed by the prior art unless there is evidence indicating such volume amounts are critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not

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inventive to discover the optimum or workable range by routine experimentation." See In re Aller, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955); In re Hoeschle, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

Claims 50-51 and 152-153 are rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Chung and Wainer or Sakata et al. or Hermann and Wainer or Sakata as applied to claim 1 above, and further in view of U.S. Patent No. 3,418,113 to Rao.

Chung or Herman in view of Wainer or Sakata differ from the claims in that there is no teaching of additional metal powder or that the additional metal powder is a sintering aid. Rao teaches in the same field of endeavor discloses (column 2, lines 17-20) the additional of metal powder to aid the sintering of metal that is not readily sintered is known. Rao teaches the sintering aid can be zinc, silver or mercury, see column 3,lines 43-45 and claims 4. Therefore to add additional material such as silver in the composition of Chung or Herman in view of Wainer or Sakata in order to facilitate the sinterability of their powder composition would have been obvious to one skilled in the art.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference

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claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-2, 4-6, 24, 26-27, 29-30, 38-39, 41-49, 152-156, provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10, 21-29, and 36 of copending Application No. 11/601,421. Although the conflicting claims are not identical, they are not patentably distinct from each other because every limitation recited in the instant claims is disclosed in the claims of the copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 8:30-5:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Roy King/
Supervisory Patent Examiner, Art Unit
1793

n.m.